

Focus

DESIGNED FOR GREEN DRIVING



© Sono Motors

The Sion.

Limiting global warming and curbing greenhouse gas emissions are the main goals of the Paris climate agreement. Electric cars can contribute to achieving these goals. VDMAimpulse investigated the various options available for electric cars and took a closer look at two specific models: the Sion and e.GO Life.

By Katrin Pudenz

The Sion was developed by Sono Motors. Founded in 2016, the company is currently the second youngest electric car manufacturer in Germany. Sono Motors has already produced the first prototypes of the electric four-seater car, which is equipped with an 80 kW engine and single-speed transmission to guarantee good traction.

A total of 330 solar cells spanning a surface area of 7.5 square meters are integrated into the electric car. Coated with a layer of polycarbonate to protect them from harmful environmental influences, these solar cells are used to recharge the Sion both on the road and while the car is parked. According to the manufacturer, the Sion can travel 250 kilometers on a single battery charge, while solar cells generate enough energy to cover another 30 kilometers per day. Thanks to bidirectional charging, up to 2 kW of surplus energy can be used to power additional electric devices. The Sion is set to cost 16,000 euros, and the battery can either be rented or bought at a price of around 4,000 euros.

Company history

Sono Motors was founded by young entrepreneurs Laurin Hahn, Jona Christians and Navina Pernsteiner. On their website, they tell the story of how their company came to be: "We - Laurin and Jona - had a critical phone call and talked about the waste of fossil fuels. We decided to take matters into our own hands to see some changes. We started to develop a car in Jona's garage that demonstrates how solar energy can make us independent from mineral oil." And this is how they started their company.

Sono Motors was founded in 2016 together with Laurin Hahn's roommate Navina Pernsteiner, who convinced Hahn and Christians to launch a crowd-funding campaign to kick-start their endeavor. And that was a good decision.

"We raised around 700,000 euros in the crowd-funding campaign," the founders recall. This was enough to take the next step and develop a prototype of the Sion. They chose Roding Automobile GmbH as a partner for developing and producing the prototype. Currently, they are taking the Sion on a test drive tour across Europe to convince potential buyers. To go into series production, they need about 5,000 pre-orders.

Becoming reality: the e.GO Life

On the other hand, the start date for the series production of the e.GO Life is already set in stone. The car was developed at the RWTH Aachen for about 30 million euros - a mere tenth of the usual development costs in the industry. The e.GO Life was fathered by Professor Günter Schuh, who heads the department of Production Systems Engineering at RWTH Aachen and is CEO of the electric car manufacturing company e.GO Mobile.



The e.GO Life.

Professor Schuh founded the e.GO Mobile AG to turn his vision of developing and producing an internationally competitive, practical and affordable electric car in the high-wage country of Germany into reality. As a result, the e.GO Life was designed as a compact and nippy electric car from the very beginning - as agile as a sports car and as practical as a compact car. The company emphasizes, however, that all statements on the car's technical data are based on provisional values and calculations. With a basic drive performance of 15 kW (22 kW peak performance) and an engine torque of 110 Nm, the e.GO Life takes 5.7 s to accelerate to 50 km/h. The car's top speed is 104 km/h and it consumes 9.9 kWh per 100 km. The e.GO Life's range is optimized through recuperation during braking, which means that the braking energy is converted into electric energy and fed back into the battery. Depending on the model, the e.GO Life is equipped with six or eight battery

modules with a gross energy of 14.4 kWh or 19.2 kWh. The electric car can thus travel 130 km or 170 km on a single battery charge. The battery modules have a capacity of up to 22 kWh and are mounted centrally in a protected area underneath the vehicle. The e.GO Life can be recharged using conventional Schuko plugs (230 V, secured with 16 A), meaning that users don't have to look far to find a suitable charging station. An optional charging cable is available to enable the use of charging station.

Preparing series production

Production at the TRIWO Technopark Aachen will start in spring 2018. The construction of e.GO Mobile AG's production plant in Aachen is funded with about 2.6 million euros provided by the state of North Rhine-Westphalia. On an area spanning 16,000 square meters, the TRIWO Technopark Aachen will become home to e.GO Mobile's production and logistic facilities and offices. The production of the affordable e.GO Life city car will start in the second quarter of 2018. The electric car is priced at 15,900 euros (before deduction of a buyer's premium). "We are very proud of the fact that series production of up to 10,000 cars per year will start at our facilities in Aachen in spring 2018," says Schuh. "This will create 140 new jobs," he adds. The e.GO Life was developed three times faster and at a tenth of the usual development costs in the industry. This was possible thanks to highly iterative development processes and closely networked production processes in a dedicated Industrie 4.0 factory. Through the consistent use of digital production tools and comprehensive digital networking of all production areas and steps, the e.GO Life is the first standard vehicle produced using Industrie 4.0.

In addition to the vertical networking used in conventional car manufacturing, the production of e.GO Life also focuses on horizontal networking. This makes it possible to specify, build and introduce new components quickly when there are changes to part specifications. The usually tedious processes of drafting functional and requirement specifications for defining the design thus become considerably easier, saving time and costs. ■

Further Information

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